

and *A. Dracontium*. The tapetal cells early show peculiarities of cell wall, cytoplasm, and nucleus. The wall entirely disappears, and the freed protoplasts form a "periplasm" that spreads through the cavity of the sporangium. The forms assumed by the tapetal nuclei, as well as their peculiarities of structure, suggested the possibility of "active migration among the developing pollen spores."—J. M. C.

Vermont trees.—One of the most recent additions to the rather large series of tree manuals is from Vermont.⁵³ It closely resembles that from Michigan previously reviewed,⁵⁴ but it has been revised and modified to meet the slightly different conditions in the new region. There are two sets of keys, one for winter and another for summer use. These, together with the illustrations, should make the identification of any tree an easy matter.—GEO. D. FULLER.

Fossil Sequoia from Japan.—Miss YASUI has⁵⁵ described a new species of *Sequoia* (*S. hondoensis*) from a coal field of Japan belonging to the Tertiary. The genus was recognized, not only by its normal structural features, but also by characteristic wound reactions. This discovery adds to the evidence of the wide distribution of *Sequoia* during the Tertiary, and also adds testimony to the assertion that *Sequoia* has descended from the *Pityoxylon* type.—J. M. C.

The vegetation of New York State.—BRAY⁵⁶ has compiled a useful description of the vegetation of New York State, seen from the viewpoint of an ecologist. The state is divided into zones according to MERRIAM'S system, and a map showing the modifications of the zones resulting from differences in altitude and the changes due to soil and to proximity to the Great Lakes is produced. The various forest types are well described.—GEO. D. FULLER.

Anatomy of epiphytic orchids.—CURTIS⁵⁷ has published a detailed account of the anatomy of 6 epiphytic orchids from New Zealand. Considerable variation is shown in the extent and distribution of the different tissues, and the paper is full of data that will be useful when the anatomy of orchids comes to be organized.—J. M. C.

⁵³ BURNS, G. P., and OTIS, C. H., The trees of Vermont. Vt. Agric. Exp. Sta. Bull. 194. pp. 244. pls. 90. 1916.

⁵⁴ BOT. GAZ. 57:77. 1914.

⁵⁵ YASUI, KONO, A fossil wood of *Sequoia* from the Tertiary of Japan. Ann. Botany 31:101-106. pl. 4. 1917.

⁵⁶ BRAY, W. L., The development of the vegetation of New York State. N.Y. State Coll. Forestry, Syracuse Univ. Publ. 3:pp. 186. figs. 52. 1915.

⁵⁷ CURTIS, K. M., The anatomy of 6 epiphytic species of the New Zealand Orchidaceae. Ann. Botany 31:133-149. pls. 7-12. 1917.